## Exercise 3 – Group Exercise

## Given:

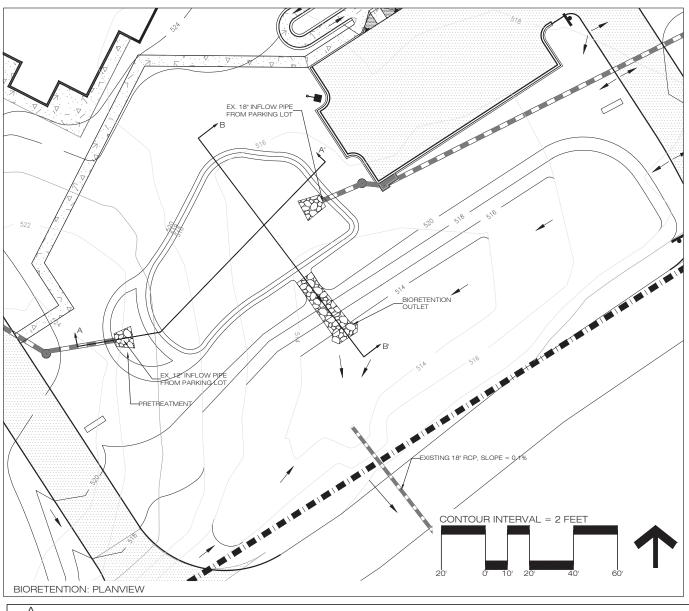
- Simplified Bioretention Level 1 Design Presented
- Site Data and DA to Bioretention as follows:

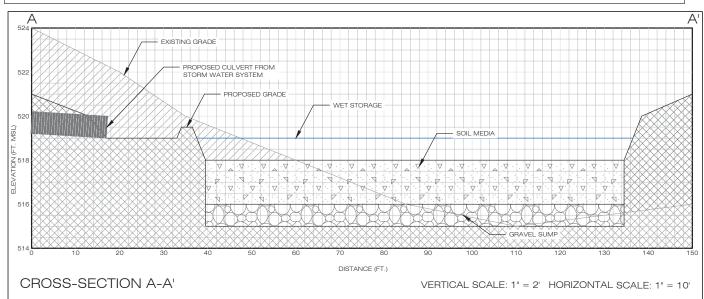
	Impervious	Managed Turf	Open Space	Total
Site Data	1.95	1.25	3.50	6.70
Drainage Area Data (to BioL1)	1.9	1.10	1.67	4.67

## **Quick Review:**

- Sizing and layout
- Consistency with Clearinghouse Specification (#9)
- Other general issues observed

**Helpful Hint:** Use your time to try to identify those things that are important facets of a stormwater practice design





PROPOSED DRAINAGE AREA CHARACTERISTICS: AREA = 4.67 ACRES IMPERVIOUS ACREAGE = 1.90 ACRES OPEN SPACE/FOREST ACREAGE = 1.67 ACRES MANAGED TURF ACREAGE = 1.10 ACRES

CURVE NUMBER: 83 TIME OF CONCENTRATION: 5 MINUTES

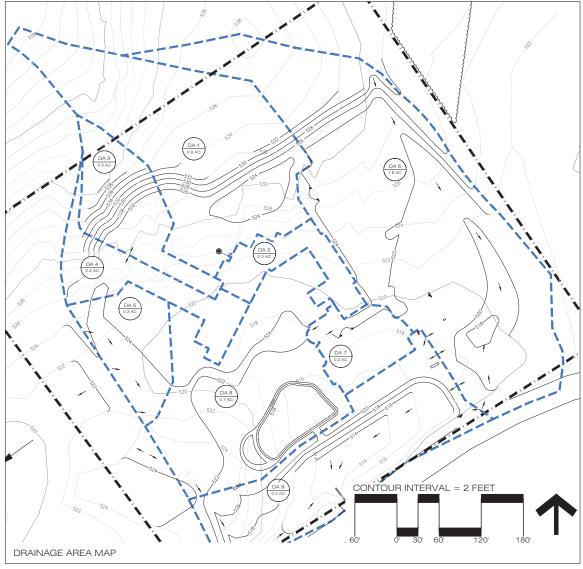
SITE CONDITIONS:
AREA = 6.7 ACRES
IMPERVIOUS ACREAGE = 1.95 ACRES
OPEN SPACE/FOREST ACREAGE = 3.5 ACRES
MANAGED TURF ACREAGE = 1.25 ACRES

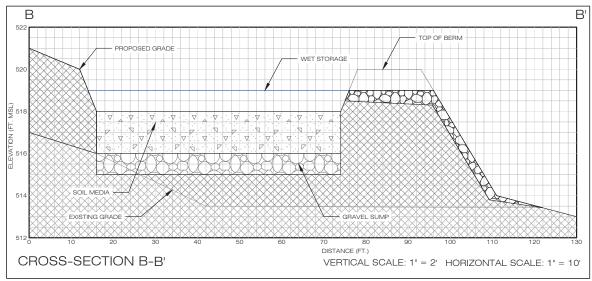
PHOSPHOROUS REDUCTION CALCULATIONS:
POST DEVELOPMENT PHOSPHOROUS LOAD
= 5.17 LB/YR

TOTAL LOAD REDUCTION REQUIRED
= 2.42 LB/YR

RUNOFF REDUCTION BY PRACTICE
= 2.972 C.F

= 2,972 C.F TOTAL LOAD REDUCTION BY PRACTICE = 2.56 LB/YR





| SIZING CALCULATIONS, BIORETENTION LEVEL 1:
| POST DEVELOPMENT TREATMENT VOLUME REQUIRED |
| SOIL MEDIA DETH = 24 IN |
| GRAVEL SUMP = 12 IN |
| WET STORAGE = 12 IN |
| STORAGE EDETH = 0 BETH x VOID RATIO |
| = (24X0.26) + (12X0.4) + (12X1) = 22.8 IN = 1.9 FT |
| SORETENTION SURFACE AREA |
| = TIV STORAGE DEPTH = 8,2311.9 = 4,332 S.F. |
| SUPER CARBAR PROVIDED = 4,345 S.F. |
| TREATMENT VOLUME PROVIDED = 8,255 C.F. |
| SPILLWAY CALCULATIONS:
| Q2 = 5.8 CFS, Q10 = 12.2 ÖFS |
| DIMENSIONS: BOTTOM WIDTH = 8 FT |
| SIDE SLOPES = 2:1 |
| SHEAR STRESS = Rh X SLOPE X SW WATER |
| = 0.28 X 0.33 X 62.4 = 5.77 LB/SF |
| CLASS II RIPRAP FOR CHANNEL LINING



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